



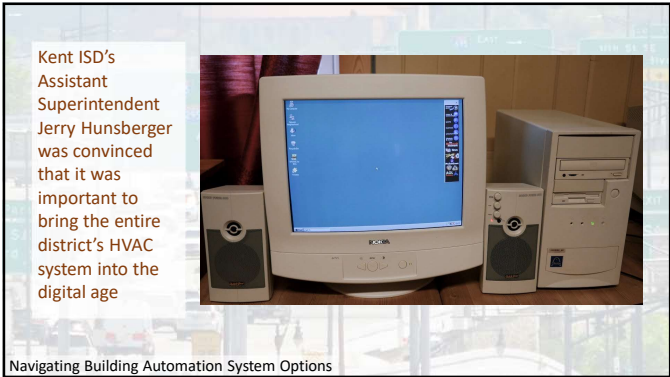
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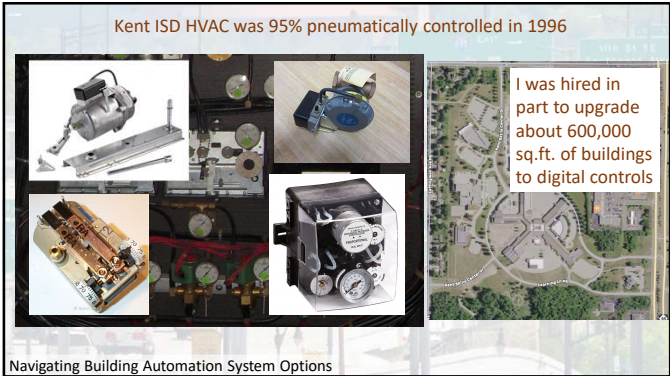
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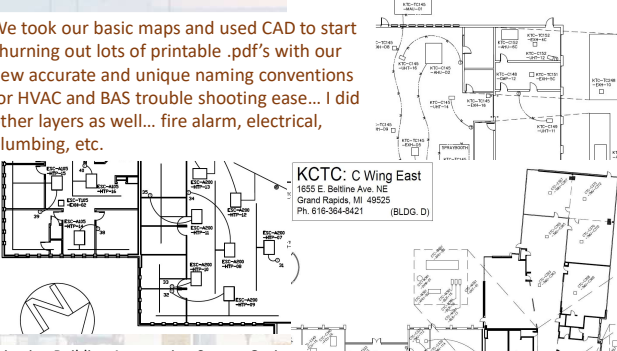
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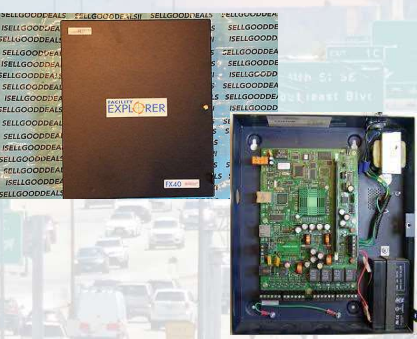
We took our basic maps and used CAD to start churning out lots of printable .pdf's with our new accurate and unique naming conventions for HVAC and BAS trouble shooting ease... I did other layers as well... fire alarm, electrical, plumbing, etc.



KCTC: C Wing East
1655 E. Beltline Ave. NE
Grand Rapids, MI 49525
Ph. 616-364-8421 (BLDG. D)

Navigating Building Automation System Options

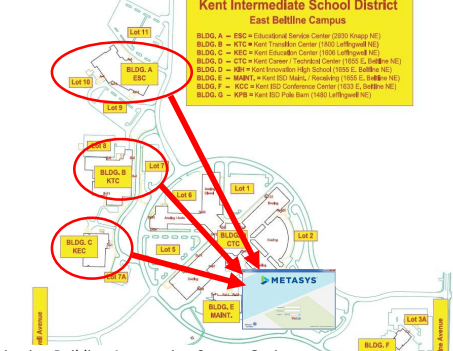
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We started considering Tridium's Niagara Platform and head end controllers and we are really glad that we did! Hi-Tech / Andy Egan helped us move into that world. Allow me to explain why this was a good idea for Kent ISD...

Navigating Building Automation System Options

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Kent Intermediate School District
East Beltline Campus

BLDG. A = ESC - Educational Service Center (2000 Sings NE)
BLDG. B = KTC - Kent Transition Center (1600 Lullwater NE)
BLDG. C = KEC - Kent Education Center (1000 Lullwater NE)
BLDG. D = CTC - Kent Career / Technical Center (1000 E. Beltline NE)
BLDG. E = KMC - Kent Metropolitan High School (1000 E. Beltline NE)
BLDG. F = KEC - Kent Education Center (1000 E. Beltline NE)
BLDG. G = KPB - Kent Public Barn (1400 Lullwater NE)

The early 2000's saw our Board continuing to support our BAS digital upgrades... more buildings came online with core systems accessible through our Metasys workstation.

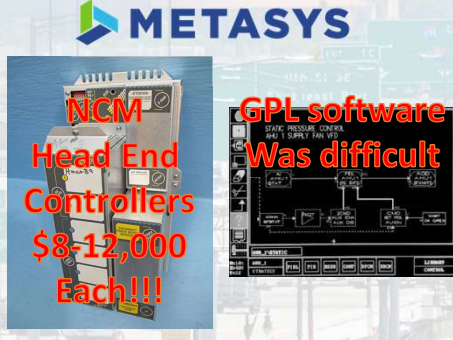
Navigating Building Automation System Options

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Navigating Building Automation System Options

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METASYS

NCM Head End Controllers
\$8-12,000 Each!!!

GPL software Was difficult

As our system grew, we became less and less enchanted with our building head end controllers. They were pricey and didn't allow us to make program tweaks without difficulty

Navigating Building Automation System Options

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It is hard to overstate how well Tridium Niagara leveled the playing field for Kent ISD and so many others.

What did it do?

- It spoke all the favorite languages of the various proprietary vendors: N2, LON, BACnet, Modbus..
- It was less than half the cost of the more proprietary solutions
- Its graphics SNAPPED – 10 to 20 times faster than our experience with Trane or JCI at that time
- It deployed securely over the Internet!
- Programming tweaks could be done with ease on the fly with a tiny bit of coaching!

GAME CHANGER #2

TRIDIUM

DIGITAL PENTECOST

United the Tower of Babel

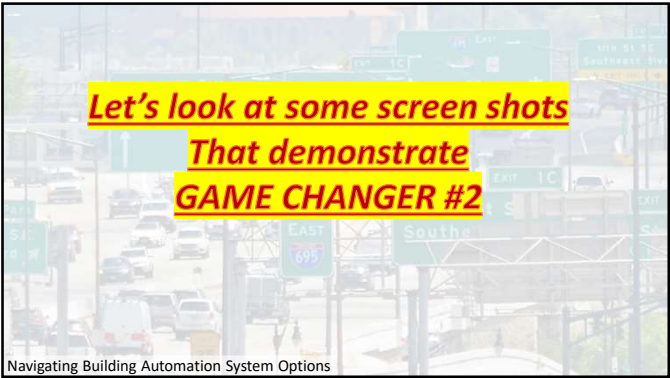
We will speak all of your languages And bring you all together under One Roof!

powered by

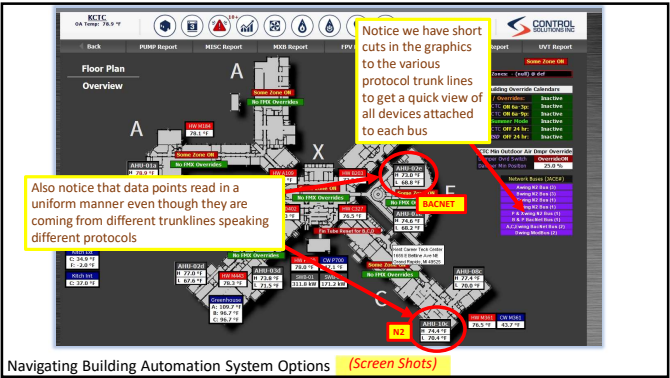
niagara framework

Navigating Building Automation System Options

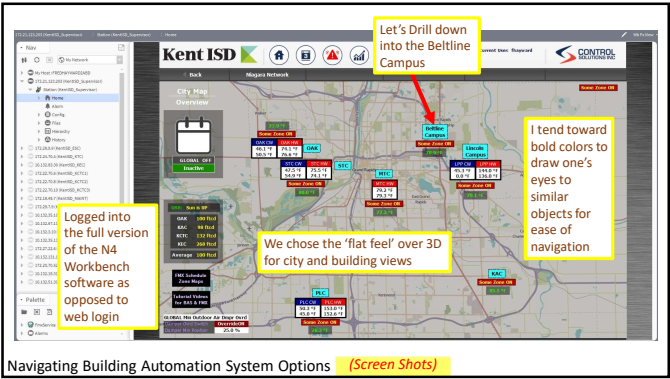
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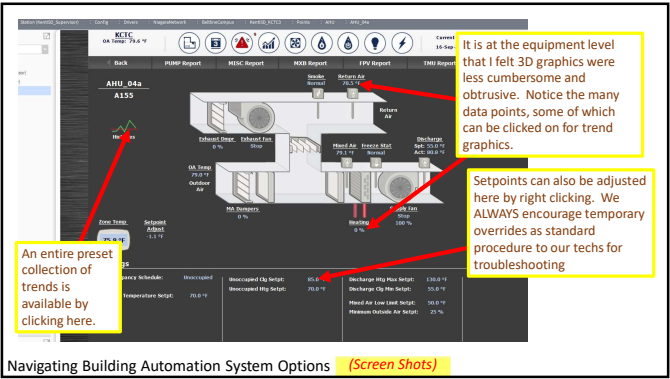
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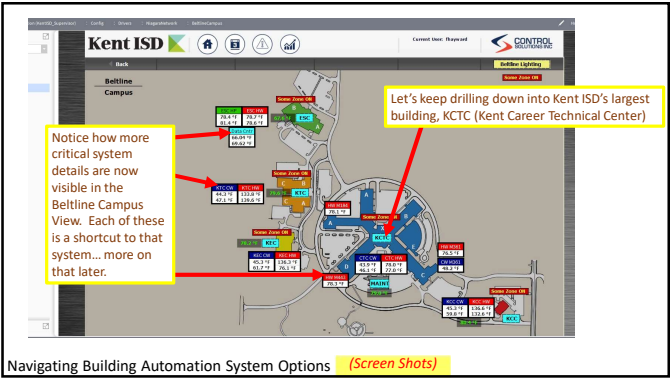
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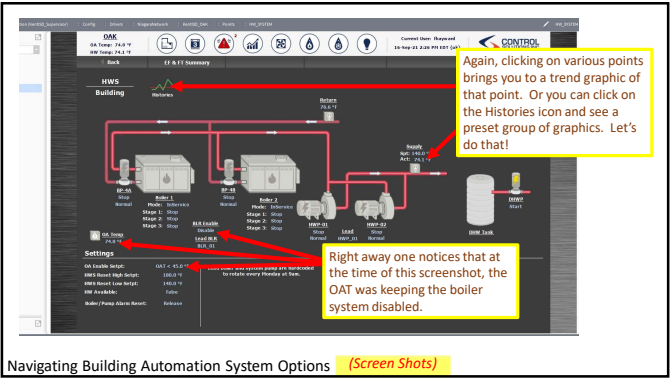
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But that is only half of the story...

- What if your IMMS after hours scheduling tool (FS Direct) could trigger specific BAS zones on for after hours usage and then release them when done?
- How many HVAC tech hours would that save a month by automating menial data entry?

GAME CHANGER #4

(Part 2)

Mapping FSA to BAS

Event	FSA Automation	Duke City Schools
Auditorium	FS Direct (Room to Zone Mapping)	HVAC Zone 01
Gymnasium	FS Direct (Room to Zone Mapping)	HVAC Zone 02
Restrooms	FS Direct (Room to Zone Mapping)	HVAC Zone 03
Cafeteria	FS Direct (Room to Zone Mapping)	HVAC Zone 04
Classrooms 301	FS Direct (Room to Zone Mapping)	HVAC Zone 05
Classrooms 302	FS Direct (Room to Zone Mapping)	HVAC Zone 06
Classrooms 303	FS Direct (Room to Zone Mapping)	HVAC Zone 06

KTC (BLDG. B)
1801 Leffingwell NE
Grand Rapids, MI 49505
Ph: 616-362-2361

Basement Space Heating for HVAC and Lighting

Navigation Building Automation System Options

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GAME CHANGER #5

While the early 2000's were unsuccessful at producing anything reliable and rugged, 2005-2010 witnessed the global takeover of portable web-enabled devices like iPhones and iPads. Why is this important to BAS and HVAC techs?

- There is an app for everything! Including BAS and HVAC interfaces like Niagara.
- No longer any need to waste another tech's time back in the shop when you are out in the field... you can override stuff in the BAS yourself, in real time, right in front of the equipment you're troubleshooting!

Navigation Building Automation System Options

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We were one of the first three school districts in the nation to connect our BAS to School Dude's IMMS!

Automating after hours scheduling was an especially big deal at Kent ISD...

- At the time, Kent ISD was still leaving all it's buildings in occupied mode until late evening – not at all a best practice
- Once my boss Mitch Bart realized what I was trying to do he worked with me to make it board policy for all after hours events to be scheduled through School Dude
- Board directives are worth pursuing!

In the mid 2000's our board made FS Direct Scheduling and Temp Setpoints Policy for the entire district. →

Navigation Building Automation System Options

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OYE VEY!!!

Now you can access your BAS from anywhere on the planet and make tweaks!!

Let's check out some screen shots of Game Changer #5!!!

Navigation Building Automation System Options

As WiFi becomes more uniform throughout our buildings it only gets easier to access our BAS even in the most far-flung mezzanines and basements...

- Our IT department works with us to set up VPN's (Virtual Private Networks)... you know that thing that fools your local network into believing you are on Campus even when you aren't?

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Another one of my somewhat geeky skills that played into the Kent ISD BAS/HVAC story is that I'm a bit of a *layout artist*. (It took a former Disney animator to help me realize that is what it is called!)

- If you cannot drill down into your BAS to the equipment you're working on quickly and intuitively you are wasting your tech's time.
- I *was* and still often *am* that tech out in the field and I'm telling you, look and feel of the interface turns out to be very important!
- Speaking of field techs and navigating the BAS, the next game changer fits in here...

Navigation Building Automation System Options

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I go to landscape view and touch the Beltline Campus link

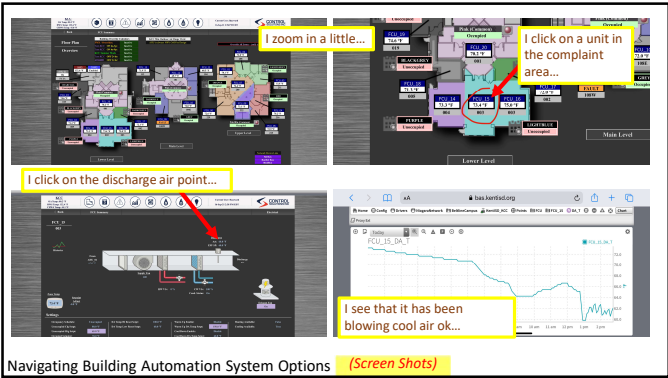
If I'm on campus I simply click on the web shortcut on my iPhone (VPN required for off campus access)

Small view is no worries on a smart phone or tablet – Zooming and re-orienting is super easy

From here I click into the KCC building...

Navigation Building Automation System Options (Screen Shots)

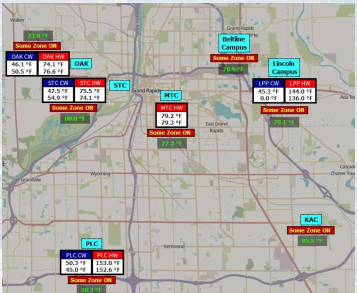
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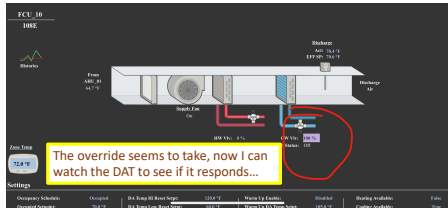
Between 2011 and 2021 (my last decade at Kent ISD) we absorb more and more Special Ed. Buildings from Grand Rapids Public Schools

- It is now best practice for ISD's to fund special education
- Not sure how GRPS obtained fiscal authority originally
- Some buildings looked fine to the casual observer
- HVAC and BAS infrastructure issues are not as obvious
- Problems surfaced quickly



Navigating Building Automation System Options

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The override seems to take, now I can watch the DAT to see if it responds...

Suffice it to say, navigating on a BAS on a smart phone or tablet has become easier with each passing year, with more features and less glitches.

Navigating Building Automation System Options (Screen Shots)

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These buildings had legacy Novar and Staefa systems with many failed components. Due to lack of funding, the HVAC equipment itself also had many failed components. While I'm sure that the facilities staff were doing the best they could with the funding provided, this didn't change the reality for those of us taking over management. Some of these buildings housed our county's most fragile students so there was understandable pressure to improve HVAC and BAS quickly.

Navigating Building Automation System Options

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By the mid 2000's, Andy Egan (Hi-Tech) started being less competitive and bids and other work began going to Vertex (now under the Knight Watch umbrella. I'm so grateful to Bill Hephner and Matt Tomes for all the help they rendered (both on and off the clock) to Kent ISD and myself. They took us a little bit further down the Tridium/Niagara road, simplifying things along the way. To this day, even after the merger, they still provide great service!



Navigating Building Automation System Options

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Navigating Building Automation System Options

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CSI helped us to adopt some best practices that Knight Watch had tried to talk me in to but I was too stubborn to listen.

- First they helped me to realize that a Jace is a Jace is a Jace... *Notice the different brands of JACE 8000 building head ends in our final lineup*
- Then they taught me how loading all our graphics and trends on the building head end controllers was overworking them and also creating security liabilities.



CONTROL SOLUTIONS INC

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FMX


FMX was chosen over School Dude, Fluke and Facilitron in the end because:

- They had already helped 150+ School Dude clients successfully transition to their suite of tools
- They had already helped 20+ clients integrate their BAS systems into the FMX suite
- It was less expensive
- It was very easy to customize
- Several of our staff had already used FMX and loved its ease of use
- The FMX staff made the transition to their product virtually painless

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Nathan Deppe from CSI was the engineer that patiently brought me along with many benefits as a result:

- We were able to standardize all the old disparate graphics into one package. Look and feel is important!
- We were able to build a database at the server level to accommodate years worth of granular trend data
- Security was greatly enhanced allowing multiple user views and authority levels based on login info
- The server could handle all this without stressing out!



CONTROL SOLUTIONS INC

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That was my experience navigating the BAS world for 25 years. I hope it helped you gain insights into some of *your* BAS challenges. Time for the distillery!



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I've been championing the power of School Dude's IMMS and BAS integration tools since Kent ISD subscribed to their services in 2001.

- Sadly, that has changed since School Dude's newest line of products do not support BAS integration despite much pressure to do so over the last three years by myself and others
- Also, their latest product did not meet expectations for ease of use that Kent ISD had come to expect
- So, after much research and RFPs Kent ISD decided to move to...



SCHOOL DUDE .com

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Let's start with a jug I'll label "Too Many Systems"

- This has been part of my experience and the experience of many of my peers
- Disintegrated systems do not allow for sharing of alarming capabilities or trending of data for trouble shooting purposes
- Some legacy systems succumb to the law of supply and demand, the parts and expertise to repair them become more expensive than replacing them.
- Now that nearly every major BAS supply company has branded a JACE that is readily available, integrating legacy systems into the Niagara platform is more possible and affordable than ever before
- But there other options out there...



Liquor #1
Too Many Systems

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With the advent of flat IP based networks that Distech and others are producing, failing legacy systems can be replaced less painfully and integrated easily when the time comes.

Distributing IP Connectivity Throughout Buildings

NAVIGATING BUILDING AUTOMATION SYSTEM OPTIONS

Liquor #1

Too Many Systems

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It is difficult to overemphasize the importance of an intuitive interface for the everyday maintenance tech!

- They are often wedged in cramped and difficult work spaces, I've been one of those techs, I know firsthand!
- They have their laptop, tablet or phone with them and they are trying to troubleshoot a BAS component
- The last thing they need is a five-minute login process or a site that makes navigation slow or trending and graphics that are glitchy and unreliable

NAVIGATING BUILDING AUTOMATION SYSTEM OPTIONS

Liquor #2

Not User Friendly

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Each of the trusted contractors I've mentioned can help you integrate your diverse and uncooperative building systems. Sometimes a BAS coach can help you navigate the many choices, develop an RFP, chose and work with the contractor that best meets your needs. Sometimes they can even help you with minor integrations!

NAVIGATING BUILDING AUTOMATION SYSTEM OPTIONS

Liquor #1

Too Many Systems

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Let's move onto Liquor #3 and call it "Integrating your BAS with your IMMS tools"

- Why waste your tech's time entering data for after hours events?
- FMX scheduling module integrates painlessly with most BAS's... I completed the Kent ISD integration in a few day's time with minimal help from the FMX integration guru
- Let the data entry fall on the building level admin assistants or even route approval for usage through principals or other stake holders

NAVIGATING BUILDING AUTOMATION SYSTEM OPTIONS

Liquor #3

Integrate JMMS Tools

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Let's move on to the 2nd jug called "Not User Friendly"

- The extremely advanced skill set needed to integrate diverse BAS's does not always come with the skill set needed for ease of use
- Sometimes intuitive design is the furthest thing from an engineer's mind as they apply their amazing skills to solving the highly technical challenges they encounter as they coax various systems to play nice in the same sand box
- Again, a humble BAS coach with a bit of field experience can suggest simple changes in the design that could help your techs function more efficiently
- Sometimes the design tweaks are simple enough for your coach to help you do them yourself!

NAVIGATING BUILDING AUTOMATION SYSTEM OPTIONS

Liquor #2

Not User Friendly

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- The next part is getting a handle on the ridiculous number of alarms a BAS can kick out on email or text
- The "Cry Wolf" effect WILL kick in and critical alarms WILL get ignored!
- You're doing yourself, your insurance company and your techs a favor by making the system smarter!
- Unfortunately, the ability to do this is one thing FMX cannot yet do, but it is in the works.

ONE and ONLY ONE IMMS Work order that automatically escalates!

NAVIGATING BUILDING AUTOMATION SYSTEM OPTIONS

Liquor #3

Integrate JMMS Tools

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Again, many of your and my favorite contactors can help you prepare your BAS for integration to an IMMS like FMX. Or FMX can do the integration for you as well for a reasonable fee. Just keep in mind that a BAS Coach can help you do a chunk of the prep and integration yourself or train one of your savvy techs to do it. There are many options for you.

Navigating Building Automation System Options

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Lastly, there are two things on the horizon that you might just want to keep your eye on...

- Data analyzing tools for BAS – “Continuous Commissioning” (Sky Spark, Kodelabs, Buildingfit, Otto etc.)
- Operations Hero – perhaps the only potential competitor to FMX in the IMMS market that takes developing APIs for BAS integration seriously (Opened doors July 2021)



New IMMS Kids on the Block

Navigating Building Automation System Options

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The last jug of distilled deliciousness we will label “Getting BAS training for you and your staff”

- Training staff on the fly only goes so far
- It is important to remember to include training in the specifications for larger HVAC and BAS projects
- Cochrane Tech Services, JCI and Distech have options



Navigating Building Automation System Options

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Navigating Building Automation System Options (Session 110b)

Presenter: Fred Hayward,
Building Automation System Coaching and Design
Email: bascoachfred@gmail.com
Phone: 616-299-2848
Web: www.bascoachfred.com

Navigating Building Automation System Options

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Once again, many of your and my favorite contactors can offer you onsite training of your own BAS system. But remember a BAS coach can help you as well, often at a significant cost savings. They can even help you record tutorials on your system demonstrating various skills for your techs and everyday users to learn and review often.

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